



BARRICK RESOURCES (USA), INC.

M/045/017

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MINERALS PROGRAM
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DIVISION OF
OIL, GAS & MINING

July 16, 1990

Mr. Donald A. Ostler, P.E.
Executive Secretary
Utah Water Pollution Control Committee
288 North 1460 West
P.O. Box 16690
Salt Lake City, Utah 84116-0690

Re: Dump Leach Area 3
Construction Permit

Dear Mr. Ostler:

Barrick has received, by telecopy on July 13, 1990, the construction permit for our Dump Leach #3 facility. We are in substantial agreement with the terms and intent of the permit, but seek through this correspondence to clarify your Item No. 5 on page 2 of the permit.

The wording of Item 5 should read "... U.S. Standard Sieve size one (1) inch ..." as previously submitted in the design documents and technical specifications (see attached). We have nearly completed the screening of all earthen liner material to this specification (1 inch) and feel a correction to this minor oversight is warranted. This clarification was also discussed with Mr. Patel of your staff this date.

Barrick continues to appreciate the Bureau's cooperation in these matters.

Respectfully,

Glenn M. Eurick jh

Glenn M. Eurick
Environmental Affairs Coordinator

Attachments

cc: F. D. Wicks	R. R. Sacrison
C. L. Landa	L. Mize (BWPC)
E. E. Maurer	M. Bateman (Tooele County Health)
T. B. Faddies	T. Suchoski (DOGM)
M. P. Richardson	D. R. Bird (PB&L)
D. P. Beatty	T. D. Vandell (D&M)

BARRICK RESOURCES (USA), INC.
MERCUR MINE

DUMP LEACH No.3
DESIGN DOCUMENT

SUBMITTED TO:
UTAH BUREAU OF WATER POLLUTION CONTROL
FEBRUARY 1990

BARRICK RESOURCES (USA), INC.
MERCUR MINE
P.O. BOX 838
TOOELE, UTAH 84074

BARRICK

The inlet end of the primary channel will extend to a nominal 7040 elevation, approximately 200 feet from the discharge point. The discharge end will lie directly over the primary leak collection riser. An inlet gradient will be formed over the riser by shaping both the foundation and the secondary HDPE sheet. Either native Long Trail or imported bentonite clay will be tamped around the riser and riser inlet. The secondary sheet shall be welded to the HDPE riser using current industry practice for such joints.

The riser orifice itself will be wrapped with geotextile to function as a filter cloth. The leakage channel will be placed directly on the filter cloth to assure transmission of water into the riser.

3.4 Primary Clay Liner

The clay is manufactured from both fresh and weathered Mississippian Long Trail Shale. The shale is processed across a double-deck screen plant. The top deck has three-inch by three-inch (3 x 3) openings, and in this application serves primarily to protect the bottom deck. The bottom deck has a 1 x 1 opening, producing a relatively fine shaly clay.

The final product shall contain no individual particles greater than three inches in size. The clay shall contain no more than 2% by weight roots, organic or other deleterious material. Deleterious material includes fragments of sandstone.

The following are the in-place gradation requirements:

<u>U.S. Standard Sieve Size</u>	<u>Minimum Percent Passing by Weight</u>
3"	100
2"	90
3/4"	80
1/2"	70
# 4	50
# 40	30
#200	20

The clay should not be gap-graded or skip-graded in any manner which would increase permeability. In addition, the Plasticity Index shall be greater than or equal to ten.

Clay shall be compacted to not less than 95% of maximum dry density as per the Standard Proctor Test (ASTM D-698-78). Field tests will be done with a

BARRICK MERCUR GOLD MINE
MERCUR CANYON
TOOELE COUNTY, UTAH

IV. CONSTRUCTION SPECIFICATION

FOR

1990 DUMP LEACH 3 CONSTRUCTION PROJECT

IV. CONSTRUCTION SPECIFICATION

9.0 PRIMARY CLAY LINER

- 9.1 The Earthwork Contractor shall be responsible for placement and compaction of the clay liner. Such placement will be coordinated with the Synthetic Contractor.
- 9.2 The clay will be placed in stockpiles by the Owner. These stockpiles will be within 3,000 feet by road, of the Dump Leach 3 site. A minimum of 70,500 cy of compacted clay will be required to construct the primary liner.
- 9.3 The clay liner will be constructed by dumping clay on or near the backfilled anchor trench. Care shall be taken to prevent dumping downslope in such a manner as to degrade the underlying HDPE sheet.
- 9.4 The Earthwork Contractor shall place and maintain grade stakes along the anchor trench during the placement phase. These shall be set on 25-foot centers, and marked to indicate a minimum acceptable placement layer of 16 inches of clay. The Contractor shall take care to avoid disturbing these stakes. Disturbed stakes shall be replaced prior to further dumping or slope work in the vicinity.
- 9.5 The clay shall be spread downslope using low ground pressure tracked dozers or excavators of a nominal 54,000 lb. GVW or lighter. Cross-slope tramming and dozing will be minimized to prevent gouging through the underlying clay and contacting the HDPE liner. Velocities will be prudent to minimize rutting. The Contractor shall check grades to assure the placement equipment maintains a minimum of 12 inches of clay under the tracks.
- 9.6 Compactive efforts will not commence until a minimum of 16 inches of loose clay have been placed in an area. Compaction will be attained using the equipment described in Paragraph 4.3 and Appendix D. Six to eight passes using a belayed 20-ton vibratory roller appear sufficient for compacting the clay.
- 9.7 Clay shall be compacted to not less than 95% of maximum dry density as per the Standard Proctor test (ASTM D 698-78). Acceptable moisture shall range from 0 to +5% of optimum. Testing frequencies are addressed in Paragraph 9.10.
- 9.8 Gradation and plasticity tests will also be taken. The Plasticity Index shall be greater than or equal to ten. The in-place gradation shall meet the following requirements:

IV. CONSTRUCTION SPECIFICATION

<u>U. S. Standard Sieve Size</u>	<u>Minimum Percent Passing by Weight</u>
3"	100
2"	90
3/4"	80
1/2"	70
#4	50
#40	30
#200	20

The clay should not be gap-graded or skip-graded in any way which would increase permeability.

- 9.9 Upon attainment of compaction, gradation and plasticity, the liner shall be tested for permeability, using a triaxial permeater with back pressure. The test will be conducted in accordance with the US Army Corps of Engineers procedure EM11110-2-1986. It should be noted that attaining permeability was not a problem on Dump Leach 1 or 2, with the same clay used as liner. A maximum permeability of 1×10^{-7} cm/s is allowed.

- 9.10 Liner testing shall be conducted on the following frequencies:

<u>Test</u>	<u>Grid</u>	<u>Frequency</u>
Thickness	25 x 25	(1/625 SF)
Field Density	50 x 50	(1/2,500 SF)
Laboratory suite:	100 x 100	(1/10,000 SF)
Proctor Test		
Gradation Test		
Atterberg Limits		
Permeability Test	100 x 200	(1/20,000 SF)

- 9.11 Approximately 3.3 acres of liner will lie under the permanent process pool. This includes the sump basin. Two lifts shall be compacted here. Each lift shall have a minimum compacted thickness of 12 inches. The clay for the second lift may be transported using front-end loaders or traxcavators if the slope is not subject to rutting by such traffic. The alternative is to doze all of the second lift clay downslope. That will require added care to, and possible re-establishment of, quality assurance on the upper slope.

- 9.12 All quality assurance for the primary clay liner will be the responsibility of the Earthwork Quality Assurance (EQA) supervisor. That party will be in the direct employ of the Owner and will report directly to the Engineer. The EQA